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BEFORE ACCESSING ~~INFORMATION~~ IN AN IMS DATABASE, ENSURE THAT ITS LOCAL DESCRIPTION MATCHES WITH THE DESCRIPTION STORED IN * DATA MANAGEMENT BLOCK

KEYWORDS: IMS, HIERARCHICAL DATABASE, DATABASE DEFINITION, DATABASE DESCRIPTION, DMB, DATABASE ORGANIZATION, SUSPEND ACTIVITY ALERT USERS.

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STIC Searcher Gregory Denman Phone 272-3520

Date picked up 8/16/05 Date Completed 8/16/05

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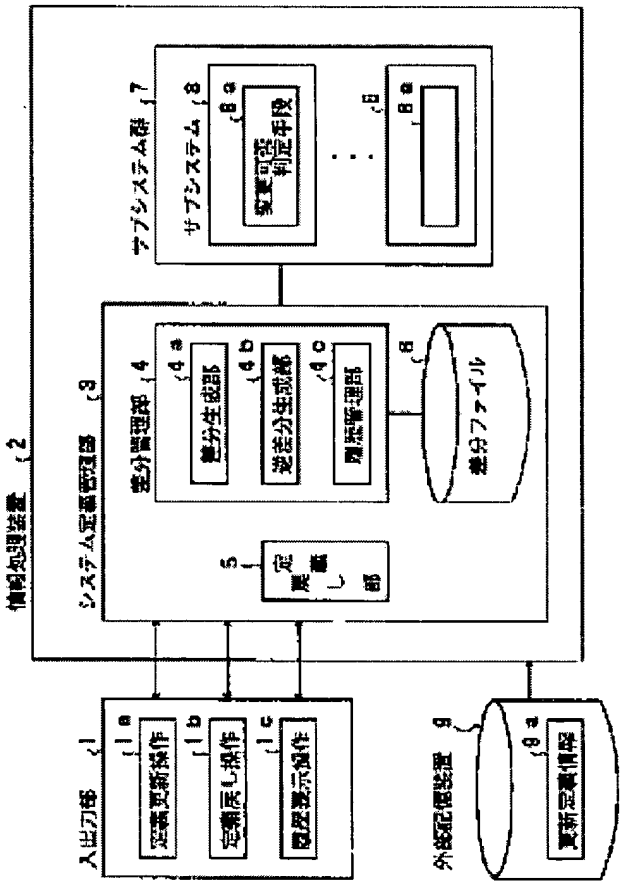
MANAGEMENT SYSTEM FOR SYSTEM DEFINITION INFORMATION

Patent number: JP8101763
Publication date: 1996-04-16
Inventor: KAWAI YUKIO; SUZUKI MAMORU
Applicant: FUJITSU LTD
Classification:
- international: G06F9/06; G06F9/06
- european:
Application number: JP19940237304 19940930
Priority number(s): JP19940237304 19940930

Abstract of **JP8101763**

PURPOSE: To manage the operation history ana keep the compatibility with the system state of update to a new generation and return to the preceding generation of definition information in environments where change operations of system definitions set to programs having various functions are collectively managed with respect to the management system for system definition information set to plural subsystems which execute respective control processings of an information processor. CONSTITUTION: A system definition management part 3 which collectively manages system definitions is provided with a difference generation part 4b which generates the difference of present system definition information in accordance with the update operation of definition information to generate a difference file 6 corresponding to the generation and reports it to each subsystem 8. Each subsystem 8 discriminates whether definitions can be updated in the present system state or the like or not with respect to the reported difference. If they can be updated, definition information of each subsystem is updated; but if they cannot be updated, the output to indicate the error is generated to the system definition management part 3.



NOTICES *

1.This document has been translated by computer. So the translation may not reflect the original precisely.
2.**** shows the word which can not be translated.
3.In the drawings, any words are not translated.

DETAILED DESCRIPTION

[Detailed Description of the Invention]
[0001]
[Industrial Application] This invention relates to the management method of the system definition information in information processing system. In information processing system, many subsystems (program) for performing various kinds of control action are used, for example, file management, a communication control program, various kinds of compilers, etc. are variously various.
[0002] If such each subsystem (program) does not set up system definition information required for actuation of each subsystem, it cannot operate. As system definition information, the information about the classification of main storage, storage capacity, the connected I/O device, a communication controller, a file storage unit, etc. with which information processing system was then equipped is included.
[0003] Although opportunities, such as extension of the device of the network in systems operation and modification of an employment gestalt, increase and system definition is changed in a computer system in recent years each time, to be able to perform easily management of modification hysteresis and restoration to the definition before modification is desired.
[0004]
[Description of the Prior Art] Drawing 4 is the explanatory view of the conventional example. System definition information (it is only called definition information) 1-n by which 40 are set to a subsystem 1 - Subsystem n, actuation means (it constitutes from program) 1-n of the definition change information in which 41 has original contents corresponding to each subsystem, and 42 are subsystem 1-n which consists of a different program among drawing, respectively.
[0005] In the example of drawing 4 , in order to change the definition information on each subsystem 1 - n, the original actuation means 1 - n are used to each, and the definition information 1 on the corresponding subsystem 1 - n - n are changed. If the example of the definition information 1 explains, "A" shall be set as a subsystem 1 as current definition information. Definition information is changed by setting the definition information 1 which carried out the key stroke, and set it as the subsystem 1, or recorded "A+alpha" beforehand to a subsystem 1 with the actuation means 1 to change these contents into "A+alpha" as definition information 1 by modification of a computer system, looking at a screen with the actuation means 1. Each definition information can be changed by actuation means 2 which is different about other subsystem 2-n, respectively - n.
[0006] Although the definition information on each subsystem needed to be changed by this approach using the original actuation means, respectively, this is improved and the method of unifying an actuation means to perform modification actuation of system definition is realized.
[0007]
[Problem(s) to be Solved by the Invention] Even if an actuation means to change the above-mentioned conventional system definition information is unified, the definition information on each subsystem is frequently changed by change of the configuration of a computer system etc. in many cases. In that case, in the above-mentioned Prior art, since the actuation hysteresis of the system definition information on a

subsystem group was not managed, there was a problem that system definition before changing restoring to the definition before modification by an error occurring etc. after changing system definition could not be restored.

[0008] In addition, it is related with generation controls, such as a program, program data, and a file, as a Prior art, and is JP,1-276229,A, Although indicated by each official report, such as JP,3-58125,A, JP,3-9426,A, and JP,3-14046,A, in the case of system definition information, it was not able to restore to a former generation, using these techniques as it is.

[0009] In the environment where modification actuation of the system definition set up to a program with various kinds of functions is managed collectively, this invention aims at offering the management method of the system definition information which can maintain a system state and adjustment in return in updating to the new generation of system definition, and a former generation while it manages actuation hysteresis.

[0010]

[Means for Solving the Problem] Drawing 1 is the principle block diagram of this invention. In drawing 1 1 an input function and an output function the I/O section which it has, and 2 -- an information processor and 3 -- the system definition Management Department and 4 -- difference -- the patch file in which the part to the generation (latest generation) of the present [difference / which produces the Management Department and 5 in the definition return section, and produces 6 among each generation of the definition information for every subsystem] is stored, and 7 -- a subsystem group (system) -- The subsystem with which two or more 8 was prepared, a modification propriety judging means by which 8a judges the propriety of definition modification of each subsystem, and 9 are the external storage with which new definition information (updating definition information) 9a was stored. Moreover, 1a-1c are actuation performed in the I/O section 1, respectively, and 1a is [definition return actuation and 1c of definition update operation and 1b] hysteresis display actuation.

[0011] Have the Management Department and it corresponds to the update operation of definition information here. this invention -- the system definition Management Department -- difference -- Generate difference, store in a patch file, notify the reciprocal difference to each subsystem which generates and corresponds corresponding to return actuation, and it judges whether these updating and return are possible with each subsystem. When possible, updating or return of the subsystem is performed, when improper, definition information is not changed, and an improper message is outputted. [definition information]

[0012]

[Function] In drawing 1 , in the I/O section 1 of an information processor 2, an operator performs definition update operation 1a for updating the definition information before each subsystem to new information, and inputs definition information. Updating definition information 9a beforehand set as external storage 9 at this time is prepared, and the contents can be put in block by definition update operation 1a, and it can be made to input. In this explanation, the definition information on the n-th generation shall be set as the current subsystem group 7, and updating definition information 9a may be the n+1st generation. the system definition Management Department 3 -- the actuation input of renewal of a definition -- responding -- difference -- in order for the Management Department 4 to start and to update definition information -- difference -- generation section 4a operates. difference -- generation section 4a asks for the difference of inputted updating definition information 9a for updating, and the working definition information (the n-th generation) which the system definition Management Department 3 manages. the called-for difference -- difference -- while being held at the Management Department 4, it is notified to the subsystem 8 with which the subsystem group 7 corresponds.

[0013] In each subsystem 8 which received the notice, it judges whether in modification propriety judging means 8a, it can change about the difference received, respectively. If this judgment judges whether the resource which each subsystem uses, employment conditions, etc. are suited and suits, it will update the definition information in a subsystem by difference, will notify the system definition Management Department 3 of updating C, and if it does not suit, it notifies an updating failure. difference -- if updating C is received, the Management Department 4 registers into a patch file 6 the

difference produced by updating as difference of the n-th generation, and when improper, it will output a message [that it cannot update in the I/O section 1].
[0014] From the I/O section 1, an operator specifies a generation and performs definition return actuation 1b. In this explanation, if it should be specified that it returns to the definition information in front of the time cost of the generation (the n-th generation) set as the information processor 2, the definition return section 5 will be started. the definition return section 5 -- thereby -- difference -- reciprocal-difference generation is performed to the Management Department 4. Thereby, reciprocal-difference generation section 4b takes out the reciprocal difference (equivalent to the difference when updating from the n-1st generation to the n-th generation) for restoring to the former generation's (the n-1st generation) condition from a generation (the n-th generation) current from a patch file 6, and the reciprocal difference is generated. This reciprocal difference is notified to the subsystem 8 with which the subsystem group 7 corresponds.
[0015] It judges that the subsystem 8 which received the notice can restore a definition by the reciprocal difference in modification propriety judging means 8a on the resource which each subsystem uses, employment conditions, etc. respectively. case [consequently,] it is possible -- the definition information in that subsystem 8 -- the reciprocal difference -- changing -- the former generation's condition -- restoring -- difference -- the Management Department 4 is notified. the notice which cannot return [change] the present definition information when it cannot restore -- difference -- the Management Department 4 is notified. difference -- when the notice which cannot return [eliminate] the difference (reciprocal difference generated in the above-mentioned reciprocal-difference generation section 4b) of the n-th generation stored in the patch file 6 when the notice which can be returned was received is received, the Management Department 4 leaves the contents of the patch file 6 as it is, and makes the message which a definition cannot return output from the definition return section 5 to the I/O section 1 Return actuation of definition information can be performed by the principle with the same said of only two or more generations returning in front from current generation.
[0016] if hysteresis display actuation 1c is performed from the I/O section 1 -- the difference of the system definition Management Department 3 -- hysteresis Management Department 4c of the Management Department 4 operates. Hysteresis Management Department 4c takes out each generation's difference from a patch file 6, and is outputted and displayed on the I/O section 1.
[0017]
[Example] Drawing 2 is the block diagram of an example and drawing 3 is the renewal of definition information, and the processing flow of return. In drawing 2 , the I/O device, and 11-1 - 11-n which 10 equips with keyboard 10a and display 10b for updating Each generation inputted The definition information on (1-n) and 12 CPU, memory And a file storage unit etc. the included information processor and 13 -- the system definition Management Department and 13a -- the notice section of modification information, and 14 -- difference -- the Management Department and 15 -- difference -- the generation section and the patch file to which in the reciprocal-difference generation section and 17 the return section and 18 manage the hysteresis Management Department, and 19 holds and manages [16] the difference between each generation -- 20-1 - 20-n are each subsystem. A program can constitute each part of drawing 2 which reaches 13-18 and is shown by 20.
[0018] If a command is issued in order to perform each, such as renewal of definition information (modification in a new generation), return to the original generation's definition information, and a hysteresis display, with a command from keyboard 10a, control corresponding to a command will be performed at the system definition Management Department 13. an input setup is first carried out collectively from external storage, such as a disk unit, by the definition information on the 1st generation, and renewal of definition information performs definition information 11 according to modification of the hardware and software (for example, a terminal, capacity of storage, etc.) which constitute a system after that etc. -- having -- the second generation and the third generation -- an input setup of the definition information is carried out at ... and sequence.
[0019] the system definition Management Department 13 -- difference -- the Management Department 14 and difference -- the generation section 15, the reciprocal-difference generation section 16, the return

section 17, and the hysteresis Management Department 18 are controlled, and definition information over two or more subsystems 20 of each corresponding to various kinds of programs of an information processor is managed.

[0020] drawing 3 explains the processing flow of renewal of system definition information, and return by the system definition Management Department 13 (difference -- the Management Department 14 - the return section 17 are included) and the subsystem 20. If updating directions of system definition information occur by command input from keyboard 10a of I/O device 10 in the case of 2 of an update process of A. (S1 of drawing 3), while the system definition Management Department 13 operates, new definition information (it may be the n-th generation) will be read (S2 of drawing 3). In this case, n-th-generation definition information 11-n of drawing 2 is read into the system definition Management Department 13. Next, the present definition (the n-th-1st-generation working definition) information is read from the definition information storing section (drawing 2 is not shown) of an information processor 12 (S3 of drawing 3). next, the difference of the read new definition information (the n-th generation) and the present definition information (the n-1st generation) -- information -- the difference of drawing 2 -- it is generated in the generation section 15 (S4 of drawing 3). The generated difference evacuates to the n-th generation of the patch file 19 of drawing 2 .

[0021] Although each next processing steps S5-S10 are processing of return of definition information, and common processing, if the case of an update process is explained, the contents of modification of definition information, and in this update process, the difference generated by updating will be notified from notice section of modification information 13a to each subsystem 20 (R> 3 drawing 3 S5). The definition information which each subsystem which received this inspected the condition of a system, and was changed judges modification propriety by whether the conditions like hard software of the present system are fulfilled, and notifies the propriety of definition modification to the notice section of modification information (13a of drawing 2) (S6 of drawing 3). the notice section of modification information distinguishes the propriety of definition modification (said -- S7).

[0022] although the judgments which are performed in modification which updates definition information are the contents which extend hardware if an example is given, the condition of a system configuration will be extended by them -- are changed so that a lot of memory areas may be used, and current memory space is [that being a judgment and] sometimes sufficient -- it is carried out about various elements, such as carrying out that judgment.

[0023] when judged with this modification being possible, each subsystem performs processing which reflects the modification information on a definition in a system (said -- S8), and validates new definition information as the present definition information (this S9). moreover, when judged with modification being impossible, modification actuation of a definition is considered as an error and a message notifies the contents of abnormalities (said -- S10). In this case, by notifying the system definition Management Department 13 of a modification failure from the subsystem 20 of drawing 2 , the system definition Management Department 13 generates a message [that it cannot change] to I/O device 10, and a message is displayed on display 10b. moreover, the difference of the n-th generation from which the system definition Management Department 13 was evacuated -- information is cancelled (or deletion).

[0024] The case of processing of return of the definition information shown in B. of drawing 3 is explained. As a result of changing a system configuration, the function of this return can be used when returning the generation before it is secured that an error does not occur when a failure occurs. It can return in fact till two or more generations before (the 1st generation is included). By this explanation, current generation is made into the n-th generation, and the example returned before one of them (the n-1st generation of a dimension) is explained.

[0025] if the command which returns the original generation definition information is inputted from keyboard 10a and return directions occur (R> 3 drawing 3 S11), the system definition Management Department 13 of drawing 2 will identify and return this, and will drive the section 17, and the return section 17 will read the patch file 19 where the difference (difference n) of a former generation and current generation was saved to the reciprocal-difference generation section 16 (said -- S12). if

reciprocal-difference information is generated from the read contents (S13 of drawing 3), the contents of modification of the definition with each subsystem (reciprocal-difference information on return in this case) will be notified (said -- S5).
[0026] it inspects whether modification which returns a former generation definition information for a system state is possible for each subsystem 20, modification propriety is notified to the notice section of modification information (said -- S6), and the notice section of modification information distinguishes the propriety of notified definition modification (said -- S7). here, if judged with modification of return being possible, new definition information (the n-1st generation) will be validated as the present definition information to a system like the case where it is the above-mentioned updating, reflecting the modification information on a definition (reciprocal-difference information to a former generation to return) (said -- S8) (this S9). if judged with modification of return being impossible, a message will notify as an error the contents of abnormalities (reason it becomes impossible to return) for modification actuation of return of a definition (said -- S10).
[0027] Although it may not become the case where modification of return of definition information becomes an error as mentioned above, and an error, a becoming [an error and an error]-to condition that it is shown as example below, respectively judging is performed.
(1) When software information (system definition) is added along with the time of adding hardware physically fundamentally when return becomes an error, the return activity of after that may become an error, and when it is **-** of a degree, an error occurs.
[0028] ** Cancellation after extension of a terminal definition (deletion) : when definition information is returned in order to cancel it after this extended the terminal and the terminal for deletion is being used, it cannot return system definition (deletion of a terminal).
[0029]
** Cancellation after extension of a magnetic tape unit (deletion)
** Cancellation after the addition of an external storage file (secondary storage) (deletion)
(2) The performance information of only the software for which it does not depend on external information (hard configuration information etc.) when return does not become an error can perform returning fundamentally satisfactory, and has a thing like following ** - **.
[0030]
** The definition of the language used within a system (local definition)
** When return of the definition information on the number above of jobs processed at once within the acquisition unit ** system of accounting information becomes an error, by displaying the information used as the cause used as an error on a display by the message, an operator can know a cause and can cope with it.
[0031]
[Effect of the Invention] According to this invention, operability can be improved in the environment where modification actuation of system definition information is collectively managed to extension of a device, or frequent modification of an employment gestalt in information processing system in recent years, and it becomes possible to set up so that restoration of not only management of the actuation hysteresis of system definition information but the definition before modification may be adjusted in the actual configuration of a system.

[Translation done.]

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CLAIMS

[Claim(s)]
[Claim 1] In the management method of the system definition information set as two or more subsystems which perform each control processing of an information processor, the system definition Management Department which does package management system definition It has the generation section. the difference which generates difference with current system definition information, creates the patch file corresponding to a generation to the update operation of definition information, and is notified to each subsystem -- each subsystem The management method of the system definition information which is equipped with the modification propriety judging means of renewal of a definition to the present system state etc. about the notified difference, updates the definition information on each subsystem when updating is good, and is characterized by generating the output which expresses an error to said system definition Management Department when improper.
[Claim 2] In claim 1 said system definition Management Department It has the reciprocal-difference generation section which generates the reciprocal difference with a former generation using said patch file according to return actuation of definition information, and is notified to each subsystem. Each subsystem The management method of the system definition information characterized by generating the output which judges the propriety of restoration to the generation before basing on the reciprocal difference notified by said propriety judging means, restores definition information at the time of a good judgment, and expresses an error when improper.
[Claim 3] It is the management method of the system definition information which is equipped with the I/O section linked to said information processor in claims 1 or 2, and is characterized by said system definition Management Department doing the message output of the contents of abnormalities to said I/O section according to the output which expresses an error from said subsystem to the update operation of said definition information from said I/O section, or return actuation.

[Translation done.]

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Set     Items   Description
S1       4926   IMS OR INFORMATION()MANAGEMENT?()SYSTEM? OR (HIERARCH?)(3N-
            )(DBS OR DATABASE()SYSTEM? OR DATA()BASE?()SYSTEM?)
S2    4235502   DESCRIB? OR DESCRIP? OR DEFINITION?
S3    2523694   COPY? OR COPIE? OR (2ND OR SECOND? OR ANOTHER? OR DUPLICAT?
             OR MIRROR? OR CLONE? OR TWIN OR PARALLEL OR TANDEM? OR DUAL?
            OR BACKUP? OR SPARE?)(3N)(VERSION? OR ITERATION?)
S4        529   DATA()MANAGEMENT?()BLOCK? OR DMB OR DMBS OR DATA?(3N)(CONT-
            ROL()BLOCK? OR STORAG?()POOL?)
S5     361804   SYNCHRON? OR SYNCRON? OR CONCURR? OR (RENDER? OR MAKE? OR -
            MAKING OR MADE)()(IDENTICAL? OR SIMILAR? OR COINCID?)
S6     358707   IDENTICALIZ? OR IDENTICALIS? OR RESYNCRON? OR RESYNCHRON? -
            OR MATCH? OR UPDAT? OR (CHECK? OR COMPAR? OR CONTRAST?)(2N)(S-
            IMILAR? OR COINCID?)
S7    3580283   MISMATCH? OR DISSONAN? OR DISONAN? OR UNALIK? OR UNLIK? OR
            DISIMILAR? OR DISSIMILAR? OR "NOT"()UPDAT? OR PROBLEM? OR ERR-
            OR? OR FAULT? OR ABNORMAL? OR ANOMAL? OR GLITCH? OR GREMLIN?
S8    3789930   SUSPEND? OR SUSPENSION? OR ALERT? OR STOP? OR ALARM? OR SI-
            GNAL? OR HALT? OR CEASE? OR CEASING OR CESSATION? OR ARREST? -
            OR DISCONTINU? OR INTERRUPT? OR TERMINAT?
S9    1232229   IC=G06F?
S10    918851   MC=T01?
S11      1878   S1 AND S5:S7
S12      1652   S11 AND S2:S4
S13      1290   S12 AND S7:S8
S14         0   S13 AND S2 AND S3 AND S4
S15         0   S12 AND S2 AND S3 AND S4
S16         0   S11 AND S2 AND S3 AND S4
S17         5   S13 AND S2:S3(7N)S1 AND S1:S3(7N)S5:S7
S18         9   S12 AND S2:S3(7N)S1 AND S1:S3(7N)S5:S7
S19         9   S11 AND S2:S3(7N)S1 AND S1:S3(7N)S5:S7
S20       124   S13 AND S8
S21       124   S12 AND S8
S22       124   S20:S21
S23        63   S22 AND S9:S10
S24        15   S23 AND S5:S7(7N)S8
S25        23   S22 AND S5:S7(7N)S8
S26        80   S17:S19 OR S23:S25
S27    823170   PR=2002:2005
S28        69   S26 NOT S27
S29        69   IDPAT (sorted in duplicate/non-duplicate order)
S30       109   S1 AND S2 AND S3
S31        15   S30 AND S5:S6
S32        12   S31 NOT S26
S33        12   S32 NOT S27
S34        12   IDPAT (sorted in duplicate/non-duplicate order)
S35         8   S1 AND S5 AND S8
S36         3   S35 NOT (S33 OR S26)
S37         3   S36 NOT S27
S38         3   IDPAT (sorted in duplicate/non-duplicate order)
? show files
File 347:JAPIO Nov 1976-2005/Apr(Updated 050801)
        (c) 2005 JPO & JAPIO
File 350:Derwent WPIX 1963-2005/UD,UM &UP=200552
        (c) 2005  Thomson Derwent
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Set     Items   Description
S1       4926   IMS OR INFORMATION()MANAGEMENT?()SYSTEM? OR (HIERARCH?)(3N-
            )(DBS OR DATABASE()SYSTEM? OR DATA()BASE?()SYSTEM?)
S2    4235502   DESCRIB? OR DESCRIP? OR DEFINITION?
S3    2523694   COPY? OR COPIE? OR (2ND OR SECOND? OR ANOTHER? OR DUPLICAT?
             OR MIRROR? OR CLONE? OR TWIN OR PARALLEL OR TANDEM? OR DUAL?
            OR BACKUP? OR SPARE?)(3N)(VERSION? OR ITERATION?)
S4        529   DATA()MANAGEMENT?()BLOCK? OR DMB OR DMBS OR DATA?(3N)(CONT-
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S5     361804   SYNCHRON? OR SYNCRON? OR CONCURR? OR (RENDER? OR MAKE? OR -
            MAKING OR MADE)()(IDENTICAL? OR SIMILAR? OR COINCID?)
S6     358707   IDENTICALIZ? OR IDENTICALIS? OR RESYNCRON? OR RESYNCHRON? -
            OR MATCH? OR UPDAT? OR (CHECK? OR COMPAR? OR CONTRAST?)(2N)(S-
            IMILAR? OR COINCID?)
S7    3580283   MISMATCH? OR DISSONAN? OR DISONAN? OR UNALIK? OR UNLIK? OR
            DISIMILAR? OR DISSIMILAR? OR "NOT"()UPDAT? OR PROBLEM? OR ERR-
            OR? OR FAULT? OR ABNORMAL? OR ANOMAL? OR GLITCH? OR GREMLIN?
S8    3789930   SUSPEND? OR SUSPENSION? OR ALERT? OR STOP? OR ALARM? OR SI-
            GNAL? OR HALT? OR CEASE? OR CEASING OR CESSATION? OR ARREST? -
            OR DISCONTINU? OR INTERRUPT? OR TERMINAT?
S9    1232229   IC=G06F?
S10    918851   MC=T01?
S11      1878   S1 AND S5:S7
S12      1652   S11 AND S2:S4
S13      1290   S12 AND S7:S8
S14         0   S13 AND S2 AND S3 AND S4
S15         0   S12 AND S2 AND S3 AND S4
S16         0   S11 AND S2 AND S3 AND S4
S17         5   S13 AND S2:S3(7N)S1 AND S1:S3(7N)S5:S7
S18         9   S12 AND S2:S3(7N)S1 AND S1:S3(7N)S5:S7
S19         9   S11 AND S2:S3(7N)S1 AND S1:S3(7N)S5:S7
S20       124   S13 AND S8
S21       124   S12 AND S8
S22       124   S20:S21
S23        63   S22 AND S9:S10
S24        15   S23 AND S5:S7(7N)S8
S25        23   S22 AND S5:S7(7N)S8
S26        80   S17:S19 OR S23:S25
S27    823170   PR=2002:2005
S28        69   S26 NOT S27
S29        69   IDPAT (sorted in duplicate/non-duplicate order)
File 347:JAPIO Nov 1976-2005/Apr(Updated 050801)
        (c) 2005 JPO & JAPIO
File 350:Derwent WPIX 1963-2005/UD,UM &UP=200552
        (c) 2005  Thomson Derwent
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29/3,K/20 (Item 20 from file: 350)
DIALOG(R)File 350:Derwent WPIX

013438610 **Image available**
WPI Acc No: 2000-610553/200058
XRPX Acc No: N00-452067
Recovery log synchronizing **method to remote site in data processing system, involves outputting hierarchical and relational database data from respective records by marking point using preset time stamp**
Patent Assignee: INT BUSINESS MACHINES CORP (IBMC)
Inventor: BEIER H A; KERN R F; MOORE D W; RANSON K A; WATTS V L
Number of Countries: 001 Number of Patents: 001
Patent Family:

Patent No	Kind	Date	Applicat No	Kind	Date	Week	
US 6065018	A	20000516	US 9834867	A	19980304	200058	B

Priority Applications (No Type Date): US 9834867 A 19980304
Patent Details:

Patent No	Kind	Lan	Pg	Main IPC	Filing Notes
US 6065018	A		16	G06F-017/30	

Recovery log synchronizing **method to remote site in data processing system, involves outputting hierarchical and relational database data...**

Abstract (Basic):
DETAILED **DESCRIPTION** - ...

...a) **signal** bearing medium having program of machine readable instruction...

...b) recovery **synchronizing** apparatus...

...For disaster recovery of primary database in data processing system using **IMS** and DB2 system of hierarchical data...

... **Synchronizes** recovery logs of different database structured related database. Ensures that data on the related database...

... **DESCRIPTION** OF DRAWING(S...

...The figure shows flow chart of operational sequence for **synchronizing** the hierarchical relational logs transmitted to remote site for recovering related database
International Patent Class (Main): **G06F-017/30**
Manual Codes (EPI/S-X): **T01-G05C1** ...
... **T01-J05B4M** ...

... **T01-S03**

29/3,K/29 (Item 29 from file: 350)
DIALOG(R)File 350:Derwent WPIX

010751522 **Image available**
WPI Acc No: 1996-248477/199625
XRPX Acc No: N96-208732
Definition information management system - **change proprietry decision unit** updating definition **information on each subsystem if** update **is correct and expressing** error **generated output to component when** updating **is incorrect**
Patent Assignee: FUJITSU LTD (FUIT)
Number of Countries: 001 Number of Patents: 002
Patent Family:

Patent No	Kind	Date	Applicat No	Kind	Date	Week
JP 8101763	A	19960416	JP 94237304	A	19940930	199625 B
JP 3570639	B2	20040929	JP 94237304	A	19940930	200465

Priority Applications (No Type Date): JP 94237304 A 19940930
Patent Details:

Patent No	Kind	Lan	Pg	Main IPC	Filing Notes
JP 8101763	A		7	G06F-009/06	
JP 3570639	B2		8	G06F-009/06	Previous Publ. patent JP 8101763

Definition information management system - ...
...**change proprietry decision unit** updating definition **information on each subsystem if** update **is correct and expressing** error **generated output to component when** updating **is incorrect**

...Abstract (Basic): The system includes a management component (3) which performs package management of the system **definition** in accordance to **update** operation of **definition** information. The difference to a present system **definition** information is formed. A differential generator produces a differential file and notifies each subsystem (8 ...

...Each subsystem has a change propriety decision mechanism (8a) for renewing the **definition** to the present system state corresp. to the difference made by the notification. When **updating** is good, the **definition** information on each subsystem is **updated** . But when it is improper, the generated output expresses an **error** to the component...

...program, communication control program, and various kinds of compilers. Improves operativity and adjusts decompression of **definition** before change in actual system composition...
...Title Terms: UPDATE ;

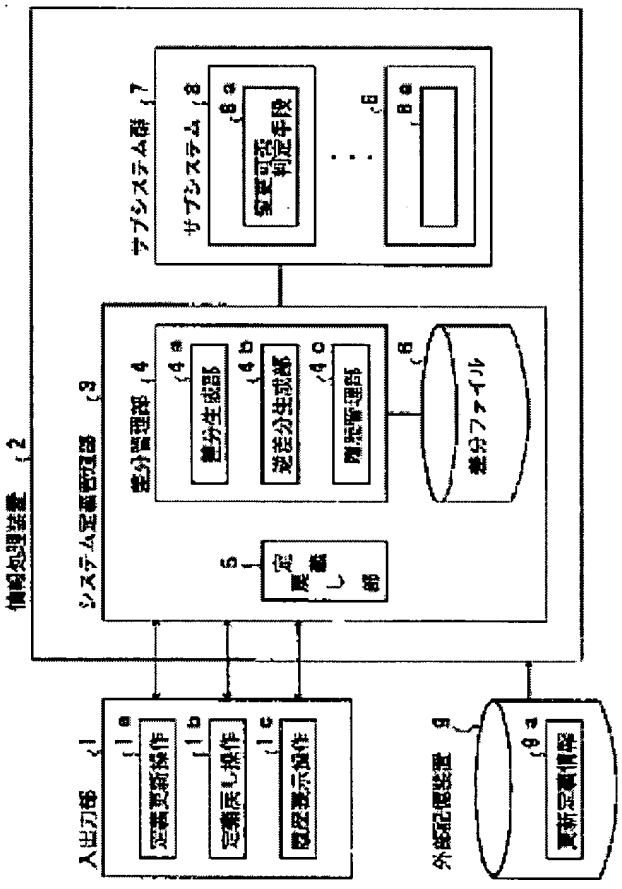
RELATED BENEATH

MANAGEMENT SYSTEM FOR SYSTEM DEFINITION INFORMATION

Patent number:	JP8101763
Publication date:	1996-04-16
Inventor:	KAWAI YUKIO; SUZUKI MAMORU
Applicant:	FUJITSU LTD
Classification:	
- international:	G06F9/06; G06F9/06
- european:	
Application number:	JP19940237304 19940930
Priority number(s):	JP19940237304 19940930

Abstract of **JP8101763**

PURPOSE: To manage the operation history ana keep the compatibility with the system state of update to a new generation and return to the preceding generation of definition information in environments where change operations of system definitions set to programs having various functions are collectively managed with respect to the management system for system definition information set to plural subsystems which execute respective control processings of an information processor. CONSTITUTION: A system definition management part 3 which collectively manages system definitions is provided with a difference generation part 4b which generates the difference of present system definition information in accordance with the update operation of definition information to generate a difference file 6 corresponding to the generation and reports it to each subsystem 8. Each subsystem 8 discriminates whether definitions can be updated in the present system state or the like or not with respect to the reported difference. If they can be updated, definition information of each subsystem is updated; but if they cannot be updated, the output to indicate the error is generated to the system definition management part 3.



29/3,K/68 **(Item 68 from file: 347)**
DIALOG(R)File 347:JAPIO

06083452 **Image available**

FAULT INFORMATION MANAGEMENT SYSTEM

PUB. NO.: 11-024966 [JP 11024966 A]
PUBLISHED: January 29, 1999 (19990129)
INVENTOR(s): HIRAMOTO KAZUYOSHI
APPLICANT(s): NEC CORP
APPL. NO.: 09-192008 [JP 97192008]
FILED: July 02, 1997 (19970702)

FAULT INFORMATION MANAGEMENT SYSTEM

INTL CLASS: **G06F-011/34**

ABSTRACT

PROBLEM TO BE SOLVED: To provide a **fault information management system** for effectively using an external storage device and preventing the occurrence of a secondary **fault** due to the restriction of external storage devices.
SOLUTION: The system is provided with an...

...of the external storage device 90 where core files 80 are generated when a process **abnormally terminates** and from the size of the core files predicted from memory used; a process monitoring means 40 to monitor the **abnormality** of the process and to give an **abnormality** -based **termination** notice when the process **abnormally terminates** ; a core file management processing means 60 to preserve the generated information file in the...

... file compression processing means 70 compressing the information file preserved in the external storage device.

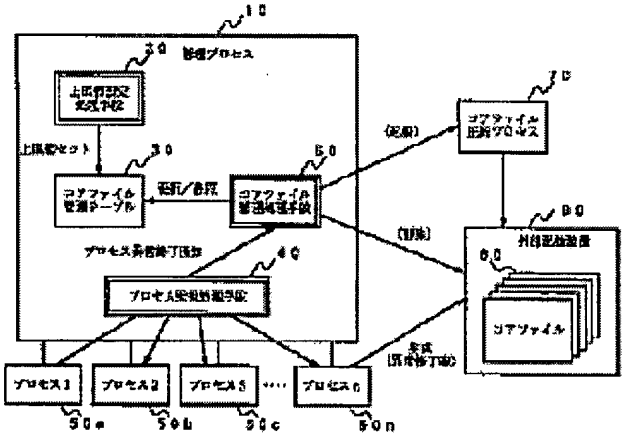
FAULT INFORMATION MANAGEMENT SYSTEM

Patent number:	JP11024966
Publication date:	1999-01-29
Inventor:	HIRAMOTO KAZUYOSHI
Applicant:	NIPPON ELECTRIC CO
Classification:	
- international:	G06F11/34
- european:	
Application number:	JP19970192008 19970702
Priority number(s):	JP19970192008 19970702

Report a data error here

Abstract of **JP11024966**

PROBLEM TO BE SOLVED: To provide a fault information management system for effectively using an external storage device and preventing the occurrence of a secondary fault due to the restriction of external storage devices. SOLUTION: The system is provided with an upper limit value setting processing means 20 to set as an upper limit value the number of information files that can be preserved in an external storage device from the permissible range of the external storage device 90 where core files 80 are generated when a process abnormally terminates and from the size of the core files predicted from memory used; a process monitoring means 40 to monitor the abnormality of the process and to give an abnormality-based termination notice when the process abnormally terminates; a core file management processing means 60 to preserve the generated information file in the external storage device when the number of the information files preserved in the external storage device does not reach the upper limit value, the same information file does not exist in the external storage device and the information file is the complete file which can be analyzed, and to delete the generated information file in a case except for the above-mentioned cases; and a core file compression processing means 70 compressing the information file preserved in the external storage device.



```
Set     Items   Description
S1      20128   IMS OR INFORMATION()MANAGEMENT?()SYSTEM? OR (HIERARCH?)(3N-
             )(DBS OR DATABASE()SYSTEM? OR DATA()BASE?()SYSTEM?)
S2    6067227   DESCRIB? OR DESCRIP? OR DEFINITION?
S3    1003055   COPY? OR COPIE? OR (2ND OR SECOND? OR ANOTHER? OR DUPLICAT?
              OR MIRROR? OR CLONE? OR TWIN OR PARALLEL OR TANDEM? OR DUAL?
             OR BACKUP? OR SPARE?)(3N)(VERSION? OR ITERATION?)
S4       1757   DATA()MANAGEMENT?()BLOCK? OR DMB OR DMBS OR DATA?(3N)(CONT-
             ROL()BLOCK? OR STORAG?()POOL?)
S5     562278   SYNCHRON? OR SYNCRON? OR CONCURR? OR (RENDER? OR MAKE? OR -
             MAKING OR MADE)()(IDENTICAL? OR SIMILAR? OR COINCID?)
S6    1008689   IDENTICALIZ? OR IDENTICALIS? OR RESYNCRON? OR RESYNCHRON? -
             OR MATCH? OR UPDAT? OR (CHECK? OR COMPAR? OR CONTRAST?)(2N)(S-
             IMILAR? OR COINCID?) OR UPDAT?(2N)(CORRECTLY OR WITHOUT()ERRO-
             R? OR ERROR?()FREE)
S7    7368032   MISMATCH? OR DISSONAN? OR DISONAN? OR UNALIK? OR UNLIK? OR
             DISIMILAR? OR DISSIMILAR? OR "NOT"()UPDAT? OR PROBLEM? OR ERR-
             OR? OR FAULT? OR ABNORMAL? OR ANOMAL? OR GLITCH? OR GREMLIN?
S8    3902058   SUSPEND? OR SUSPENSION? OR ALERT? OR STOP? OR ALARM? OR SI-
             GNAL? OR HALT? OR CEASE? OR CEASING OR CESSATION? OR ARREST? -
             OR DISCONTINU? OR INTERRUPT? OR TERMINAT? OR ERROR()MESSAG?
S9        918   S1 AND S5:S6
S10       243   S9 AND S2:S4
S11       257   S9 AND S7:S8
S12        59   S10 AND S11
S13       441   S10:S11
S14        16   S13 AND S1(7N)S2:S4 AND S1:S4(7N)S5:S8
S15        68   S12 OR S14
S16        77   S13 AND S1/TI
S17        15   S16 AND S5:S8/TI
S18        82   S15 OR S17
S19        61   S18 AND PY<2002
S20        50   RD (unique items)
S21        16   S13 AND S1:S4/TI AND S5:S8/TI
S22         0   S21 NOT S18
File   2:INSPEC 1969-2005/Aug W1
         (c) 2005 Institution of Electrical Engineers
File   6:NTIS 1964-2005/Aug W1
         (c) 2005 NTIS, Intl Cpyrght All Rights Res
File   8:Ei Compendex(R) 1970-2005/Aug W1
         (c) 2005 Elsevier Eng.  Info. Inc.
File  34:SciSearch(R) Cited Ref Sci 1990-2005/Aug W1
         (c) 2005 Inst for Sci Info
File  35:Dissertation Abs Online 1861-2005/Jul
         (c) 2005 ProQuest Info&Learning
File  65:Inside Conferences 1993-2005/Aug W2
         (c) 2005 BLDSC all rts. reserv.
File  94:JICST-EPlus 1985-2005/Jun W4
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File 111:TGG Natl.Newspaper Index(SM) 1979-2005/Aug 15
         (c) 2005 The Gale Group
File 144:Pascal 1973-2005/Aug W1
         (c) 2005 INIST/CNRS
File 239:Mathsci 1940-2005/Sep
         (c) 2005 American Mathematical Society
File 256:TecInfoSource 82-2005/Jul
         (c) 2005 Info.Sources Inc
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20/3,K/14 (Item 14 from file: 2)
DIALOG(R)File 2:INSPEC

02703164 INSPEC Abstract Number: C86040135
Title: Data validation and matching **in** information management systems
Author(s): Finn, G.D.
Author Affiliation: Software Tree, Honolulu, HI, USA
Conference Title: Proceedings of the First International Conference on Supercomputing Systems: SCS 85 (Cat. No.85CH2216-0) p.280-9
Publisher: IEEE Comput. Soc. Press, Washington, DC, USA
Publication Date: 1985 Country of Publication: USA xxv+717 pp.
ISBN: 0 8186 0654 1
U.S. Copyright Clearance Center Code: CH2216-0/85/0000-0280$01.00
Conference Sponsor: IEEE
Conference Date: 16-20 Dec. 1985 Conference Location: St. Petersburg, FL, USA
Language: English
Subfile: C

Title: Data validation and matching **in** information management systems
Abstract: A prototype data validator has been developed to monitor the flow of data into **information management systems** on an IBM mainframe. The validator is driven by an LR(1) parser and contains a Boolean optimization algorithm to improve performance and to aid in comprehensive and accurate **error** reporting. Features of the prototype validator are discussed as well as practical enhancements that can...

...on the calculation of the probability that the data is valid in addition to any **error** report.
...Identifiers: data **matching** ; ...

... **information management systems** ; ...

... **error** reporting
1985

20/3,K/24 (Item 6 from file: 6)
DIALOG(R)File 6:NTIS

1526081 NTIS Accession Number: N90-22316/5
Knowledge Structure Representation and Automated Updates **in Intelligent** Information Management Systems
Corey, S. ; Carnahan, R. S.
Martin Marietta Aerospace, Denver, CO. Denver Div.
Corp. Source Codes: 100103001; MI453156
Sponsor: National Aeronautics and Space Administration, Washington, DC.
May 90 15p
Languages: English
Journal Announcement: GRAI9021; STAR2815
In NASA, Goddard Space Flight Center, the 1990 Goddard Conference on Space Applications of Artificial Intelligence p 271-285.
NTIS Prices: (Order as N90-22294/4, PC A15/MF A02)

Knowledge Structure Representation and Automated Updates **in Intelligent** Information Management Systems
A continuing effort to apply rapid prototyping and Artificial Intelligence techniques to **problems** associated with projected Space Station-era **information management systems** is examined. In particular, timely **updating** of the various databases and knowledge structures within the proposed intelligent **information management system** (IIMS) is critical to support decision making processes. Because of the significantly large amounts of data entering the IIMS on a daily basis, information **updates** will need to be automatically performed with some systems requiring that data be incorporated and...

... structures that are easily modified and expanded, and second, on the incorporation of intelligent automated **update** techniques that will allow meaningful information relationships to be established. Potential techniques are studied for developing such an automated **update** capability and IIMS **update** requirements are examined in light of results obtained from the IIMS prototyping effort.

20/3,K/37 (Item 8 from file: 8)
DIALOG(R)File 8:Ei Compendex(R)

00817233 E.I. Monthly No: EI7905032003 E.I. Yearly No: EI79022022
Title: UPDATE **METHODOLOGY FOR** HIERARCHICAL **DISTRIBUTED** DATA BASE SYSTEMS .
Author: Yeh, Randolph T.
Corporate Source: Bell Teleph Lab, Inc, Naperville, Ill
Source: Proc Tex Conf Comput Syst 7th, Univ of Houston, Tex, Oct 31-Nov 1 1978. Publ by IEEE, New York, NY, 1978. Also Available from IEEE Comput Soc, Long Beach, Calif p 6. 12-6. 18
Publication Year: 1978
CODEN: PTCSDR
Language: ENGLISH

Title: UPDATE **METHODOLOGY FOR** HIERARCHICAL **DISTRIBUTED** DATA BASE SYSTEMS .
Abstract: Current algorithms for solving the **update synchronization problem** for multiple- **copy** data bases are, in general, time-consuming and costly. This study proposes an easy-to...

20/3,K/41 (Item 3 from file: 35)
DIALOG(R)File 35:Dissertation Abs Online

01315898 ORDER NO: AAD93-30748
SYSTEM SUPPORT FOR SOFTWARE FAULT **TOLERANCE IN HIGHLY AVAILABLE DATABASE MANAGEMENT SYSTEMS**
Author: SULLIVAN, MARK PAUL
Degree: PH.D.
Year: **1992**
Corporate Source/Institution: UNIVERSITY OF CALIFORNIA, BERKELEY (0028)
Source: VOLUME 54/06-B OF DISSERTATION ABSTRACTS INTERNATIONAL.
PAGE 3195. 253 PAGES

SYSTEM SUPPORT FOR SOFTWARE FAULT **TOLERANCE IN HIGHLY AVAILABLE DATABASE MANAGEMENT SYSTEMS**
Year: **1992**

Today, software **errors** are the leading cause of outages in **fault** tolerant systems. System availability can be improved despite software **errors** by fast **error** detection and recovery techniques that minimize total downtime following an outage. This dissertation analyzes software **errors** in three commercial systems and **describes** the implementation and evaluation of several techniques for **error** detection and fast recovery in a database management system (DBMS).

The software **error** study examines **errors** reported by customers in three IBM systems programs: the MVS operating system, the **IMS** DBMS, and the DB 2 DBMS. The study classifies **errors** by the type of coding mistake and the circumstances in the customer's environment that caused the **error** to arise. It observes a higher availability impact from addressing **errors** , such as uninitialized pointers, than software **errors** as a whole. It also details the frequencies and types of addressing **errors** and characterizes the damage they do.

The **error** detection work evaluates the use of hardware write protection both to detect addressing-related **errors** quickly and to limit the damage that can occur after a software **error** . System calls added to the operating system allow the DBMS to guard (write-protect) some...

...internal data structures. Guarding DBMS data provides quick detection of corrupted pointers and similar software **errors** . Data structures can be guarded as long as correct software is given a means to temporarily unprotect the data structures before **updates** . The dissertation analyzes the effects of three different **update** models on performance, software complexity, and **error** protection.

To improve DBMS recovery time, previous work on the POSTGRES DBMS has suggested using...
...storage system based on no-overwrite techniques instead of write-ahead log processing. The dissertation **describes** modifications to the storage system that improve its performance in environments with high **update** rates. Analysis shows that, with these modifications and some non-volatile RAM, the I/O...

Ref #	Hits	Search Query	DBs	Default Operator	Plurals	Time Stamp
L5	1962	hierarch? near5 (database or data adj base)	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT	OR	ON	2005/08/16 15:35
L6	9	5 with (syncronis$ or syncroniz$ or synchronis$ or synchroniz$)	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT	OR	ON	2005/08/16 15:36

US006487469B1

(12) **United States Patent**
Formenti

(10) **Patent No.: US 6,487,469 B1**
(45) **Date of Patent: Nov. 26, 2002**

(54) **SYSTEM AND METHOD FOR INTEGRATING SCHEDULE AND DESIGN ENVIRONMENTS**

(75) Inventor: **Jose Antonio Vieira Formenti**, Allen, TX (US)

(73) Assignee: **Texas Instruments Incorporated**, Dallas, TX (US)

(*) Notice: Subject to any disclaimer, the term of this patent is extended or adjusted under 35 U.S.C. 154(b) by 0 days.

(21) Appl. No.: **09/436,668**

(22) Filed: **Nov. 10, 1999**

Related U.S. Application Data

(60) Provisional application No. 60/108,381, filed on Nov. 13, 1998.

(51) **Int. Cl.**[7] **G06F 19/00**
(52) **U.S. Cl.** **700/97**; 700/100; 705/11
(58) **Field of Search** 700/100–108, 700/83, 97, 98, 110, 109; 705/7, 9, 11; 345/440

(56) **References Cited**

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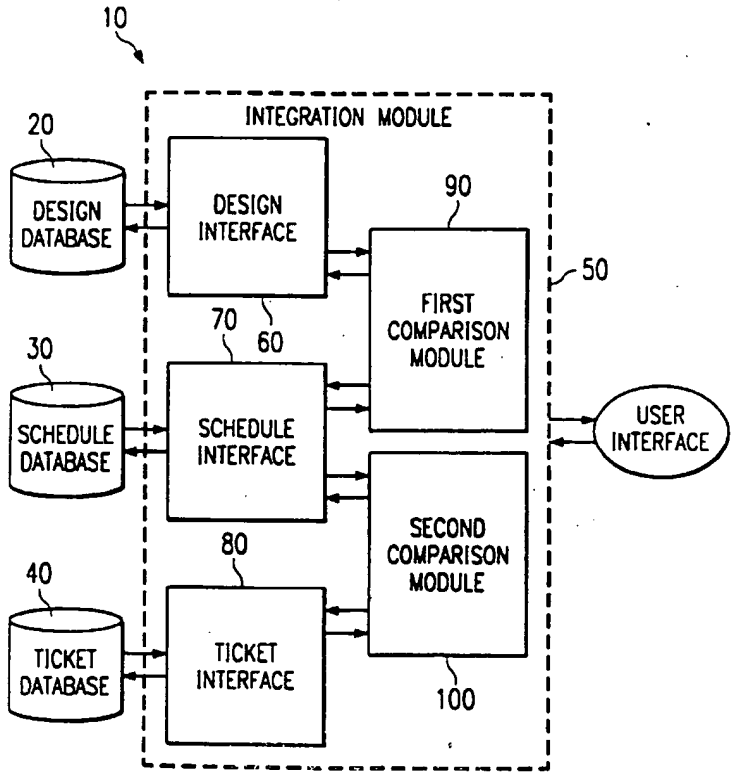
Primary Examiner—Leo Picard
Assistant Examiner—Kidest Bahta
(74) *Attorney, Agent, or Firm*—April M. Mosby; W. James Brady; Frederick J. Telecky, Jr.

(57) **ABSTRACT**

A system for project management integration includes a design database having design data stored in a hierarchical manner representable by design hierarchical data. The system further includes a schedule database having scheduling data stored in a hierarchical manner representable by schedule hierarchical data. The system also includes an integration module in communication with the design database and the schedule database, the integration module operable to compare the design hierarchical data and the schedule hierarchical data in response to changes to one of the design or schedule databases, the integration module further operable to change one of the design and schedule databases in response thereto.

27 Claims, 4 Drawing Sheets



What is claimed is:

1. A system for project management integration, the system comprising:

a design database having design data stored in a hierarchical manner representable by design hierarchical data;

a schedule database having scheduling data stored in a hierarchical manner representable by schedule hierarchical data; and

an integration module in communication with the design database and the schedule database, the integration module operable to compare the design hierarchical data and the schedule hierarchical data in response to changes to one of the design and schedule databases, the integration module further operable to change one of the design and schedule databases in response to the comparison, the integration module includes a filter operable to filter hierarchical data in response to a filtering scheme.

2. The system of claim 1, further comprising a ticket database having action items stored in a hierarchical manner representable by ticket hierarchical data, the integration module operable to compare the schedule hierarchical data to the ticket hierarchical data in response to changes to the scheduling data, the integration module operable to change the action items in response to comparing the schedule hierarchical data to the ticket hierarchical data.

3. The system of claim 1, wherein the integration module includes a monitor in communication with one of the design and schedule databases, the monitor operable to detect changes to the data therein.

4. The system of claim 1, wherein the integration module includes a parser operable to parse data of one of the design and schedule databases to generate hierarchical data associated therewith.

5. The system of claim 1, wherein the filtering scheme includes commands filtering hierarchical data related to predetermined views within the design database.

6. The system of claim 1, wherein the integration module comprises:

a design record operable to store the design hierarchical data;

a schedule record operable to store the schedule hierarchical data; and

a comparator operable to compare the design record and the schedule record, the comparator operable to change the data of one of the design and schedule databases in response to comparing the design record and the schedule record.

7. The system of claim 1, wherein the integration module comprises:

a design record operable to store the design hierarchical data;

a schedule record operable to store the schedule hierarchical data;

a comparator operable to compare the design record and the schedule record; and

a command generator operable to send an update command to the schedule database in response to the comparator comparing the design record and the schedule record.

8. The system of claim 1, wherein the filtering scheme includes commands filtering predetermined elements within a specified design.

9. The system of claim 1, wherein the filtering scheme includes commands filtering predetermined levels of design cells from the design data that will not be compared with the schedule database.

10. A system for automatically updating data of a first database in response to changes made to a second database, the system comprising:

a first interface in communication with the first database;

a second interface in communication with the second database, the second interface operable to detect changes to data in the second database; and

a comparison module in communication with the first and second interface, the comparison module operable to compare first hierarchical data associated with the first database to second hierarchical data associated with the second database in response to a change detected by the second interface, the comparison module operable to send update data to the first interface in response to comparing the first and second hierarchical data, the first interface operable to change the data in the first database in response to the update data, the second interface includes a filter operable to filter the second hierarchical data in response to a filtering scheme.

11. The apparatus of claim 10, wherein the second database is a design database having design data and the second interface is a design interface.

12. The apparatus of claim 10, wherein the second database is a schedule database having scheduling data and the second interface is a schedule interface.

13. The apparatus of claim 10, wherein the second interface includes a parser operable to generate the second hierarchical data associated with the second database.

14. The apparatus of claim 10, wherein the filtering scheme includes commands filtering hierarchical data related to predetermined portions of the data from the first database.

15. The apparatus of claim 10, wherein the comparison module comprises:

a first record operable to store the first hierarchical data;

a second record operable to store the second hierarchical data; and

a comparator operable to compare at least one field of the first record to a corresponding at least one field of the second record, the comparator sending the update data to the first interface in response comparing the fields.

16. The apparatus of claim 10, wherein the first interface includes a command generator operable to generate and send an instruction to the first database, the instruction operable to modify the data of the first database in response to the update data sent by the comparison module.

17. The system of claim 10, wherein the filtering scheme includes commands filtering predetermined portions of the data in the first database.

18. The system of claim 10, wherein the filtering scheme includes commands filtering predetermined portions of the data from the first database that will not be compared with the data from the second database.

19. A method of project management integration, the method comprising:

detecting a change to data of a first database;

parsing data of the first database to generate the first hierarchical data associated with the first database;

filtering the first hierarchical data in response to a filtering scheme;

translating the filtered first hierarchical data into a comparison format;

obtaining second hierarchical data associated with the second database in response to the detected change;

comparing the first hierarchical data to the second hierarchical data and identifying at least one difference between the first and second of hierarchical data; and

automatically generating and sending an update command to the second database in response to the at least one identified difference.

20. The method of claim **19**, wherein detecting the change comprises polling the first database.

21. The method of claim **19**, wherein detecting the change comprises detecting an interrupt generated by the first database.

22. The method of claim **19**, wherein the filtering scheme includes commands filtering hierarchical data related to predetermined portions of the data from the first database.

23. The method of claim **19**, wherein comparing the first and second hierarchical data comprises:

placing the first hierarchical data into a first record, the first record having a first set of fields;

placing the second hierarchical data into a second record, the second record having a second set of fields;

comparing at least one pair of corresponding fields of the first and second records; and

identifying a difference in the at least one pair of corresponding fields.

24. The method of claim **19**, wherein generating the update command comprises:

generating update data indicative of the at least one identified difference between the first and second hierarchical data; and

translating the update data into the update command, the update command operable to change the data stored in the second database.

25. The method of claim **19**, wherein automatically generating and sending an update command comprises:

receiving user-defined data establishing parameters of the update command;

generating the update command in response to the user defined data, the update command including instructions for changing the data in the second database, the instructions determined by the user-defined data; and

sending the update command to the second database, the update command initiating data modifications to the second database.

26. The system of claim **19**, wherein the filtering scheme includes commands filtering predetermined portions of the data in the first database.

27. The system of claim **19**, wherein the filtering scheme includes commands filtering predetermined portions of the data from the first database that will not be compared with the data from the second database.

* * * * *

US005956719A

United States Patent [19]

Kudo et al.

[11] Patent Number: 5,956,719

[45] Date of Patent: Sep. 21, 1999

[54] **SYNCHRONIZATION METHOD APPLIED TO DATABASES IN NETWORK MANAGEMENT SYSTEM**

[75] Inventors: **Miki Kudo; Akinori Kamijo; Masaharu Kamata; Keiji Mizuma; Yoshihiro Kozaki**, all of Kawasaki, Japan

[73] Assignee: **Fujitsu Limited**, Kanagawa, Japan

[21] Appl. No.: **08/815,634**

[22] Filed: **Mar. 13, 1997**

[30] **Foreign Application Priority Data**

Mar. 29, 1996 [JP] Japan 8-075560

[51] **Int. Cl.**[6] **G06F 17/30**

[52] **U.S. Cl.** **707/10**; 707/8; 707/100; 707/201; 707/203; 395/200.31; 395/200.47; 395/200.5; 395/200.82

[58] **Field of Search** 707/8, 10, 100, 707/201, 203; 395/200.31, 200.47, 200.5, 200.82

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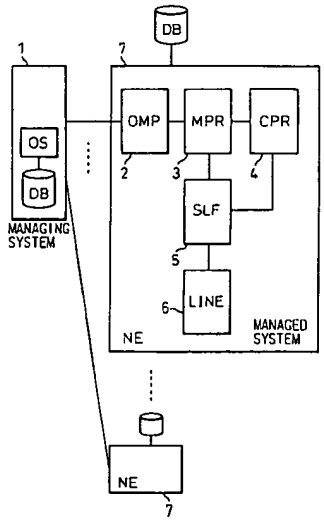
[57] **ABSTRACT**

A method of synchronization applied to databases of a network management system which establishes synchronization between a database of a managing system and a database of a managed system, and thereby facilitates the establishment of an initial database and reconfiguration of the same. The method (i) establishes a database based on a management information tree modeled on the system configuration for a network element NE forming a managed system, (ii) transfers an upper layer managed object instance information of the management information tree to an operation system OS of the managing system autonomously or by issuance of a command, (iii) starts, by the operation system OS of the managing system, the establishment of the database by the upper layer managed object instance data, (iv) demands, by this operation system OS, information of a lower layer managed object instance subordinate to the upper layer managed object instance, (v) sends, by the network element NE of the managed system, the lower layer managed object instance information to the managing system, and (vi) establish, by the managing system, the database using the thus sent information.

7 Claims, 11 Drawing Sheets



nized at the restart of the system under the new software. Note that, it is also possible to generate the differential records on line after notifying the managing system of the system restart.

FIG. 11 is a view explaining the structure of shelves in the exchange system. In the figure, blocks shown by dotted lines indicate functional blocks, and blocks of double lines indicate the shelves. ASSW is an ATM subscriber switch, BMP is a broadband main processor, NSS is a narrow band switching system, ORB is an optical ring bus, MOS is a maintenance operation sub-system, AISW is an ATM interconnection switch, and OS is an operation system. The maintenance operation sub-system MOS corresponds to the above-mentioned managing system and manages the data names (shelf names—card names) of the portions in the tree configuration.

Further, FIFSH is a fiber interface shelf for OC-12C (622 Mbps) lines, SIFSH is a subscriber interface shelf connected to OC-3 (156 Mbps) lines or the DS3 (45 Mbps) lines, ADS1SH is an ATM DS1 shelf for the DS1 (1.5 Mbps) lines, BSGCSH is a wide band signaling group control shelf, TCGSH is a test call generating shelf, ASSWSH is an ATM switch shelf, SBMESH is a subscriber message handler shelf, and GWMESH is a gateway handler shelf.

Further, IOUSH, IOESH, PRESH, and PFUSH are shelves composing the wide band call processor. Further, DKSH composing the wide band main processor BMP is a magnetic disc shelf, CPSH is a system processor shelf, and IOSH-G is an interface shelf.

Each fiber interface shelf FIFSH in the ATM subscriber switch ASSW accommodates optical fibers of OC-12 (622 Mbps). Four ATM OC12C card groups OC12PGA-1 are provided in correspondence with this shelf FIFSH.

Further, the subscriber interface shelves SIFSH mounted in correspondence with OC-3C/DS3 are constituted by the ATM OC3-C card groups OC3CPGA-A and OC3CPGB-A in the case of OC-3C (156 Mbps). In the case of DS3 (45 Mbps), eight ATM DS3 card groups ADS3PGA-A, eight circuit emulation DS3 card groups CDS3PGA-A, eight frame relay DS3 card groups FDS3PGA-A are used in correspondence with each above shelf, and four ATM DSI card groups ADSINFA-A are used in correspondence with this shelf.

Further, the subscriber interface shelf ADS1SH mounted in correspondence with the DS1 (1.5 Mbps) lines is constituted by eight frame relay DS1 card groups FDS1PGA-A, eight SMDS DS1 card groups SDS1PGA-A, and eight circuit emulation DS1 card groups CDS1PGA-A are used in correspondence with each above shelf.

As explained above, it is possible to manage the system by setting the shelf names at the upper layer hierarchy, setting the card names composing each shelf at the lower layer hierarchy, and the setting up the database at the maintenance operation sub-system MOS.

As explained above, according to the present invention, when setting up an initial database cooperating with a managed system such as a network element etc., the managed system transfers the upper layer managed object instance information in the management information tree to the managing system to start setting up the database of the managing system and the managing system demands to send from the managed system the plural sets of lower layer managed object instance information required in its database according to the received upper layer managed object instance information, therefore there is the advantage that it is possible to set up the database, in the managing system, for each managed system by this.

Further, after setting up the initial database, during a reconfiguration of the database of the managed system performed due to a reconfiguration of the system, or during a reconfiguration performed due to a change to new software along with addition of functions or upgrading of versions, the managing system is notified of this fact and the lower layer managed object instance information is transferred or a differential record is transferred from the database of the managed system to the database of the managing system in response to a demand from the managing system. Alternatively, the restart level or backup management information is notified from the managed system to the managing system, and the database of the managing system can be reconfigured on the managing system side by setting the initial value in response to the restart level and setting backup information corresponding to the backup management information, so there is the advantage that an interruption of service of the system can be minimized.

What is claimed is:

1. A method of synchronization applied to databases in a network management system comprising a managing system and at least one managed system managed by the managing system, comprising the steps of:

setting up, by said managed system, a database of a management information tree configuration modeled on the system configuration;

transferring, from said managed system to said managing system, information of an upper layer hierarchy in said management information tree configuration so that said managing system may set up its own database;

starting, by said managing system, a set up of its database based on the information of said upper layer hierarchy and demanding the information of a lower layer hierarchy sent from said managed system according to the information of the upper layer hierarchy; and

transmitting, by said managed system, the information read from its database to said managing system in response to the demand by the managing system and setting up, by said managing system, the database in the lower layer in the previously set up management information tree configuration according to the information transmitted from the managed system.

2. A method of synchronization applied to databases in a network management system according to claim 1, further comprising, at the time when reconfiguring a database due to system reconfiguration of said managed system, the steps of:

notifying, by said managed system, the above system reconfiguration to said managing system;

demanding, by said managing system, the lower layer managed object instance information required due to the reconfiguration of the database in said managed system;

transmitting, by said managed system, the lower layer managed object instance information read from its database to the managing system in response to the demand; and

reconfiguring, by said managing system, its database based on the received lower layer managed object instance information.

3. A method of synchronization applied to databases in a network management system according to claim 1, further comprising, at the time when reconfiguring a database due to system reconfiguration of said managed system, the steps of:

notifying, by said managed system, the system reconfiguration and backup management information to said managing system; and

reconfiguring, by said managing system, its database by using its own backup information referring to said backup management information.

4. A method of synchronization applied to databases in a network management system according to claim 1, further comprising, at the restart of the system of the managed system, the steps of:

initially setting, by said managed system, its database in correspondence with the restart level and notifying said managing system of the restart of the system and the restart level; and

initially setting, by said managing system, its database in correspondence with the restart level.

5. A method of synchronization applied to databases in a network management system according to claim 1, further comprising, at the restart of the system of said managed system by new software due to an addition of new functions etc. thereto, the steps of:

reconfiguring, by said managed system, its database and notifying said managing system of the restart of the system by said new software;

demanding, by said managing system, the lower layer managed object instance information in the management information tree configuration, sent from said managed system, corresponding to said addition of the new functions;

transmitting, by said managed system, the lower layer managed object instance information read from its database to said managing system in response to said demand; and

reconfiguring, by said managing system, its database based on the transmitted lower layer managed object instance information.

6. A method of synchronization applied to databases in a network management system according to claim 1, further comprising, at the restart of the system of said managed system by new software due to an upgraded version etc., the steps of:

reconfiguring, by said managed system, its database and notifying said managing system of both the restart of the system by the new software and the update level of the database;

demanding, by said managing system, the instance information, sent from said managed system, in correspondence with the update level;

transmitting, by said managed system, the instance information read from its database to said managing system in response to that demand; and

reconfiguring, by said managing system, its database based on the read instance information or matching up the databases.

7. A method of synchronization applied to databases in a network management system according to claim 1, further comprising, at the restart of the system of said managed system due to a shift over to a new software, the steps of:

reconfiguring, by said managed system, its database and notifying, to said managing system, of the restart of the system by the new software;

demanding, by said managing system, differential records, sent from said managed system, in its database;

seeking, by said managed system, for differential records between the new database and old database and transmitting the sought differential records to said managing system; and

updating, by said managing system, its database based on said differential records.

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